

# ES&H manual

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## Environment, Safety, and Health

### Volume II

#### Part 21: Transportation

## Document 21.1

# Acquisition, Receipt, Transportation, and Tracking of Hazardous Materials

(Formerly H&SM Chapter 8)

**Recommended for approval by the ES&H Working Group**

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## 21.1

### Acquisition, Receipt, Transportation, and Tracking of Hazardous Materials\*

## Contents

1.0	Introduction .....	1
2.0	Applicability .....	2
3.0	Acquisition of Hazardous Materials or Material Requiring Prior Approval.....	3
3.1	Hazardous Materials .....	3
3.1.1	General Acquisition Process.....	3
3.1.2	Radioactive Materials .....	5
3.1.3	Explosives.....	6
3.1.4	Biohazardous Materials.....	6
3.1.5	Classified Materials.....	6
3.2	Controlled Substances .....	6
3.3	DOT Packaging.....	7
4.0	Receipt and Transportation of Hazardous Materials .....	7
5.0	Labeling of Hazardous Materials .....	8
6.0	Tracking of Hazardous Materials.....	9
6.1	Chemical Hazardous Materials.....	9
6.2	Radioactive Hazardous Materials.....	10
6.3	Explosives.....	10
6.4	Biohazardous Materials.....	10
6.5	Classified Hazardous Materials.....	11
7.0	Offsite Shipping of Hazardous Materials.....	11
8.0	Responsibilities.....	12
8.1	Supervisors.....	12
8.2	Employees .....	13
8.3	Hazards Control Department.....	14
8.4	Technical Release Representatives .....	15
8.5	Materials Management Section.....	15
8.6	Shipping Services .....	16
8.7	Materials Distribution Division .....	17
8.8	Environmental Protection Department.....	17
8.9	ChemTrack Operations Group.....	17
8.10	Hazardous Waste Management Division.....	18
8.11	Traffic Manager .....	19
8.12	Protective Force Division.....	19
8.13	Fleet Management.....	19

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\* Minor revision

8.14 Packaging and Transportation Safety Program.....	20
8.15 Facility Points of Contact .....	20
9.0 Work Standards.....	20
9.1 Work Smart Standards .....	20
9.2 Other Required Standards .....	22
10.0 Resources for More Information.....	22
10.1 Contacts .....	22
10.1.1 General.....	22
10.1.2 Packaging Requirements.....	22
10.1.4 ChemTrack System .....	23
10.1.5 Material Safety Data Sheets .....	23
10.2 Applicable Lessons Learned.....	23

## Appendices

Appendix A ChemTrack.....	24
Appendix B Controls for Authorized Chemical Delivery Areas.....	26

## Table

Table 1. Location in <i>ES&amp;H Manual</i> of hazard-specific documents.....	1
---	---

## Figure

Figure 1. Flowchart of key steps for acquiring hazardous materials.....	4
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## Terms and Definitions

### Hazardous material

For the purposes of this document, hazardous materials are generally defined as any chemical that is a physical or health hazard, and for which manufacturers are required to make material safety data sheets available.

The following items corresponding to Department of Transportation (DOT) hazard classes provide useful examples of hazardous materials:

- Compressed gases
- Corrosive materials
- Etiologic (infectious) agents
- Explosives and blasting agents
- Flammable, combustible, and pyrophoric liquids
- Flammable solids
- Other regulated materials (ORM)
- Oxidizing materials and organic peroxides
- Poisonous or irritating materials
- Radioactive materials
- Spontaneously combustible and water-reactive chemicals

The ORM category of hazardous materials is often referred to as consumer commodities. It includes items such as paint products, industrial cleaners, and other trade products.

LLNL groups hazardous material into three categories: Category 1, Category 2, and Category 3. See Section 2.0 of this document for definitions of the three categories.

### Primary chemical container

Container shipped by the chemical manufacturer and the basic unit tracked in the ChemTrack inventory system.

### Requirement

Any rule, order, regulation, law, policy, or contractual agreement (e.g., Contract 48) that directs or compels a specific action.

### Secondary chemical container

Any container, vessel, or other chemical storage device that is not a primary container.

## 21.1

### Acquisition, Receipt, Transportation, and Tracking of Hazardous Materials

## 1.0 Introduction

Because of their chemical, physical, or pathological properties, hazardous materials may present a risk of injury to LLNL personnel, visitors, offsite individuals, or the environment. In the context of this document, hazardous materials also include hazardous waste. This document outlines the process for safely and legally obtaining, receiving, transporting, and tracking hazardous materials. This document also contains requirements to protect the health and safety of personnel and the environment and to comply with applicable Department of Energy (DOE) orders as well as federal, state, and local regulations.

Several documents and volumes of the *Environment, Safety, and Health (ES&H) Manual* contain requirements pertaining to handling, using, or transporting hazardous materials and waste. The requirements in those documents are not reproduced here. The requirements are contained in various hazard-specific documents in the *ES&H Manual* as shown in Table 1.

**Table 1.** Location in *ES&H Manual* of hazard-specific documents.

Topic	Reference
Biological materials	Volume II, Part 13
Chemicals	Volume II, Part 14
Cryogenics	Volume II, Part 18
Environmental management requirements	Volume III Parts 30-36
Explosives	Volume II, Parts 17 and 21
General H&S controls involving procedures	Volume II, Parts 10, 11, and 12
General H&S controls pertaining to safety equipment	Volume II, Part 12
Ionizing radiation	Volume II, Part 20
Nuclear facility requirements pertaining to material control	Volume V, Parts 51 and 52
Transfer of equipment and property for repair, reuse, maintenance, storage, excess, or scrap	Volume II, Part 21
Shipping, transferring, and transporting materials	Volume II, Part 21

Various work- and facility-specific documents also apply to the management of hazardous materials, and shall be followed. They include the following:

- Integration Work Sheets (IWSs) and Safety Plans (SPs).

- Facility Safety Plans (FSPs) and Operational Safety Plans (OSPs).
- Site safety plans and safety analysis documents.
- Internal procedures.
- Document 21.2, "Packaging and Transportation Safety (PATs) Manual," in the *ES&H Manual*.

Beyond the above-referenced requirements, additional controls are necessary to safely manage hazardous materials and are thus contained in this document. Such requirements are associated with the following topics:

- Acquisition of hazardous materials, including special requirements associated with materials falling under the jurisdiction of Operational Procedures for Licensed Facilities under U.S. Drug Enforcement Administration (DEA) (Section 3.0).
- Receipt and transport of hazardous materials (Section 4.0).
- Labeling of hazardous materials (Section 5.0).
- Tracking of hazardous materials (Section 6.0).
- Offsite shipping of hazardous materials (Section 7.0).

## 2.0 Applicability

The requirements in this document are applicable to the Livermore Site, Site 300, and any other location where LLNL personnel have management responsibility for hazardous materials and protecting the health and safety of employees, the public, and the environment.

LLNL requires hazardous material to be divided into the three main categories below based on the level of security classification and whether the material is considered waste.

- **Category 1**—Hazardous or other materials that are also "controlled materials" because of their security classification, high value, or special hazards. Examples are
  - Accountable nuclear materials.
  - Carcinogens (if accountable or classified).
  - Classified parts and materials (other than documents).
  - Explosives.
  - Material contaminated with accountable amounts of controlled material.

- Mock high explosives (mock HE). (See Document 17.1, "Explosives," and Document 17.5, "Controlling Nuclear Explosive-Like Assemblies (NELAs) and their Mock Components," in the *ES&H Manual* for more information on mock-HE certification requirements.)
  - Precious metals, gems, and other valuable materials.
  - Radioactive materials.
  - Special reactor materials.
- **Category 2**—Unclassified hazardous wastes (e.g., asbestos, spent acids) of negligible economic value, such as radioactive and mixed waste.
  - **Category 3**—All hazardous materials other than those that fall into Category 1 or 2. Category 3 includes most industrial and laboratory chemicals that are not wastes.

Authorization requirements for the acquisition of nonhazardous materials that require approval before procurement are not addressed in this document. For more information, see the Procurement and Management home page at the following internet address:

<http://www-r.llnl.gov/ProcHome.html>

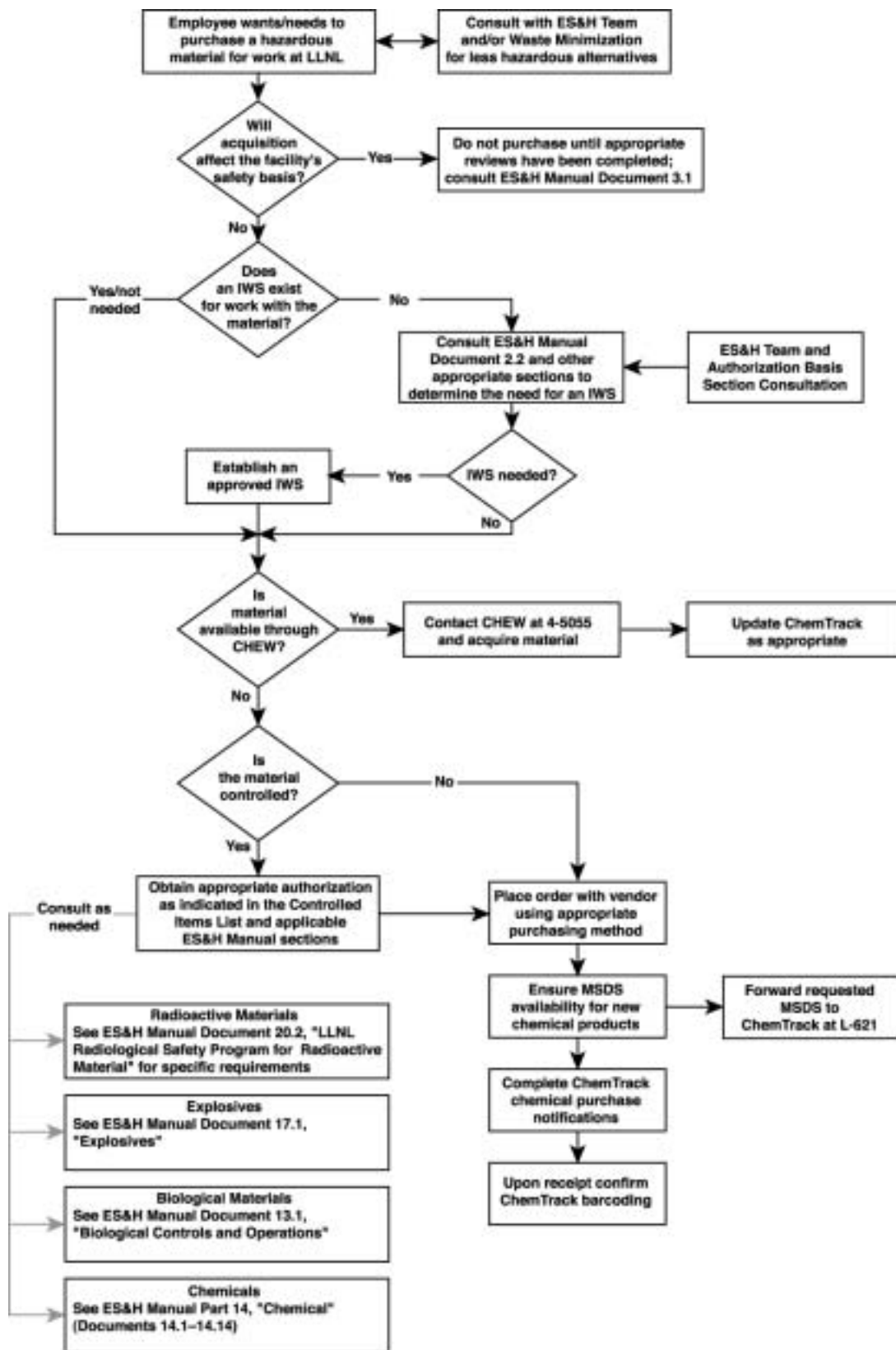
### **3.0 Acquisition of Hazardous Materials or Material Requiring Prior Approval**

Integration of pollution prevention strategies into program planning and procurement is part of managing work under LLNL's Integrated Safety Management System. Prior to the acquisition of any new material, requestors shall evaluate and balance program requirements with waste minimization techniques, such as product substitution of less hazardous materials or source reduction to only obtain quantities required. The Environmental Analyst can assist in the process of conducting a waste minimization assessment prior to new procurements. Document 30.1, "Waste Minimization and Pollution Prevention," of the *ES&H Manual* provides additional information.

#### **3.1 Hazardous Materials**

##### **3.1.1 General Acquisition Process**

Figure 1 summarizes the key steps for acquiring hazardous materials at LLNL. Specific requirements specific for radioactive, explosive, biohazardous, and classified materials are provided in sections 3.1.2 through 3.1.5.



**Figure 1. Flowchart of key steps for acquiring hazardous materials.**

The acquisition by any means of hazardous materials and related items listed in the LLNL Controlled Items/Services List shall be preauthorized by a specified representative from LLNL's Hazards Control Department as shown in the Controlled Items/Services List at:

<http://www-r.llnl.gov/pm/trr/html/controlitem.html>

The technical discipline with signature authority is listed in boldface text after each item in the Controlled Items/Services List. Confirm with an ES&H Team environmental analyst that there are disposal options for all such materials before they are purchased.

Some of the items listed in the Controlled Items/Services List may not be purchased using a Unicard. Refer to the latest version of the *LLNL Unicard User's Guide* for a list of restricted items and the current authorization procedure. If a restricted item is purchased with a purchase order, Procurement and Materiel (P&M) automatically forwards the request (requisition) to the Hazards Control Department. Therefore, it is usually more efficient to contact the Hazards Control Department in advance to discuss the purchase of any of these materials because special precautions or procedures may be required before authorization is received. The Hazards Control disciplines will contact the Health Services Department for consultation regarding health effects or medical surveillance, as appropriate. For additional information on LLNL procurement policies and procedures refer to the Procurement & Materiel Home Page at:

<http://www-r.llnl.gov/pm/ProcHome.html>

### **3.1.2 Radioactive Materials**

When acquiring radioactive material by any means, the requester or buyer shall inform the shipper of the following proper shipping address:

Lawrence Livermore National Laboratory  
Attn: Manager, Materials Management, B-231 Vault  
For: Intended Recipient  
7000 East Avenue  
Livermore, CA 94551

Refer to Document 20.2, "LLNL Radiological Safety Program for Radioactive Materials," in the *ES&H Manual* for more detailed requirements on purchasing, accepting delivery, transporting, and labeling of radioactive materials.

### 3.1.3 Explosives

When acquiring explosives by any means, the requester or buyer shall inform the shipper of the following proper shipping address for nonclassified material:

University of California  
Lawrence Livermore National Laboratory  
For U.S. Department of Energy  
Site 300, on Corral Hollow Road, 4 miles SW of  
Highway 580 and Corral Hollow Road Overpass,  
10 miles SW of Tracy, CA 95376  
Attn: Site 300 Controlled Materials Group  
For: Intended Recipient

### 3.1.4 Biohazardous Materials

For biohazardous materials, see Document 13.1, "Biological Controls and Operations," in the *ES&H Manual*.

### 3.1.5 Classified Materials

For classified materials, contact Materials Management at 2-6292 or the Site 300 Controlled Materials Group at 3-5334 to obtain the specific addressee for shipping.

## 3.2 Controlled Substances

Controlled substances are drugs or other substances that come under the jurisdiction of the Controlled Substances Act of 1970, Public Law 91-513, and are listed in the DEA Controlled Substances Inventory List. Controlled substances are not to be procured as a Unicard transaction. Authority to procure controlled substances is specifically delegated by the University and is limited to individuals listed in the *Laboratory Procurement Policy and Standard Practices Manual*, Supplemental Instruction 8.7. Procurement and Materiel maintains DEA licenses for LLNL. For guidance on procuring controlled substances, contact Procurement and Materiel Customer Service. For further information on controlled substances, refer to the *Laboratory Procurement Policy and Standard Practices Manual*, Supplemental Instruction 8.7.

Chemicals including narcotics, hypnotics, or prescription drugs that are identified on DEA Schedules I-V list may not be purchased using a Unicard or Material Request, but shall be processed through P&M. For a list of these chemicals go to:

[http://www.deadiversion.usdoj.gov/schedules/listby\\_sched/](http://www.deadiversion.usdoj.gov/schedules/listby_sched/)

### 3.3 DOT Packaging

Procurement of DOT packaging used for transporting hazardous material shall be approved by LLNL's Packaging and Transportation Safety (PATs) Program Office. For more information, go to the Packaging and Transportation Safety Program home page at

<http://www-r.llnl.gov/PATS/>

## 4.0 Receipt and Transportation of Hazardous Materials

All Category 3 hazardous materials and some Category 1 materials shipped by commercial vendors or other DOE sites are received by the Receiving Section of the Materials Distribution Division (MDD), Procurement and Materiel Department. An exception is made when MDD and the ES&H Team Leader have reviewed and authorized a specific, direct delivery area. Direct delivery areas shall meet established ES&H requirements (administrative and physical controls), as described in Appendix B of this document. Special arrangements are in place for the following materials:

- Industrial gases and 55-gal chemical and solvent drums shall be received at the Industrial Gas Yard by the Industrial Gases Section of MDD, Bldg. 518.
- Hazardous materials shall enter Site 300 through the Receiving Group of MDD; explosives and other controlled materials shall be delivered to and received by the Site 300 Controlled Materials Group of the Materials Management Section.
- The Materials Management Section of the Mechanical Engineering Department shall receive Category 1 materials from vendors, the MDD, or other DOE sites. These include radioactive materials, accountable nuclear material, nuclear explosive-like assemblies (NELAs), classified parts, and controlled or classified hazardous materials. (For instance, some alkali metals and carcinogens may be controlled or classified.) Fissile materials are sent only to the main Livermore Site through Materials Management, whereas explosives are sent only to Site 300 through Materials Management. The Materials Management Section, along with the requester, shall arrange for storage and transportation of these materials and deliver them to qualified end users, as described in Document 21.2 and all applicable Materials Management Section operational procedures.

The Industrial Gases Section of MDD shall ensure that the material received is properly packaged and secured. Bar codes are placed on each primary chemical container, which is then entered into the ChemTrack System at the time of receipt. The Industrial Gases Section will not affix labels to certain commodities, such as poisonous gases, but will include a label for the user to affix. (See Appendix A of this document for items to be included in ChemTrack.) The group shall also arrange for overnight storage (with the exception of poisonous gases, which are required to be delivered on the day they are received) and delivery of materials to the final users (see Document 21.2).

The Hazardous Waste Management (HWM) Division of the Environmental Protection Department shall receive reusable hazardous materials and hazardous waste (see Document 36.1, "Waste Management Requirements," in the *ES&H Manual*), including hazardous waste generated from the use of Category 1 and 3 materials (some limitations apply). HWM shall also arrange for the reuse or temporary storage and/or transportation of such materials to HWM treatment and storage facilities in accordance with the guidelines in Document 21.2 and all applicable HWM operational procedures.

## 5.0 Labeling of Hazardous Materials

Appropriate labeling is required when hazardous materials are stored, handled, disposed of, or transported. Proper labeling of materials used at LLNL serves to warn users of hazards and helps ensure that eventual disposal is carried out properly. Federal, state, and local requirements govern the proper labeling of hazardous materials. The requirements are specific and detailed, vary depending on the hazard, and may be revised periodically.

Applicable controls associated with the labeling, tracking, and storage of hazardous materials, as specified in the corresponding hazard-specific document in the *ES&H Manual* (see Table 1) or as specified in the applicable Work Smart Standard shall be followed. The following general precautions are required when storing or using hazardous materials.

- Warning signs shall be posted in all areas where hazardous materials are handled or stored. Consult the hazard-specific document of the *ES&H Manual* for additional details
- A label, material tag, or other means of identification shall be attached to each container indicating the name and address of the manufacturer, the name of the substance, and the hazard warning as required by the Occupational Safety and Health Administration (OSHA). For additional information on labeling and identification requirements, refer to the following and in the *ES&H Manual*:
  - Document 10.2, "LLNL Health Hazard Communication Program"
  - Document 13.1, "Biological Controls and Operations"
  - Document 17.1, "Explosives"
  - Document 20.2, "LLNL Radioactive Safety program for Radioactive Materials"
- Equipment containing or contaminated with hazardous materials requires proper containment and labeling as specified in Document 21.5, "Requirements for Transfer of Equipment and Property for Repair, Reuse, Maintenance, Storage, Excess, or Scrap," in the *ES&H Manual*. More specific

requirements depend on the type of material (e.g., explosives) and its concentration or quantity. Consult the hazard-specific document, as well as Document 3.3, "Operations and Facility Safety Plans," in the *ES&H Manual* for additional details.

- Waste containers shall have the appropriate hazardous, radioactive, mixed, or nonhazardous waste label (see Document 36.1, "Waste Management Requirements," in the *ES&H Manual*).

Refer to the ES&H Team supporting the work area for additional or more specific information.

Additional labeling, marking, and placarding requirements are in effect when transporting hazardous materials, both offsite and onsite. LLNL has developed labels unique to LLNL that meet the state and federal hazardous waste requirements while onsite. For additional information regarding onsite transportation of hazardous materials, see Document 21.2 at:

[http://www.llnl.gov/es\\_and\\_h/hsm/doc\\_21.02/doc21-02.pdf](http://www.llnl.gov/es_and_h/hsm/doc_21.02/doc21-02.pdf)

For additional information regarding offsite transportation, see Section 7.0 of this document, or contact the Traffic Office or the Materials Management Section.

## **6.0 Tracking of Hazardous Materials**

Tracking of hazardous materials at LLNL, including requirements for maintaining chemical inventories, is performed as specified in this section. Hazardous materials brought into a facility may impact the safety basis envelope of a facility or trigger related regulatory compliance activities. Before bringing hazardous materials into a facility, the requestor shall ensure that the materials are consistent with the IWS authorizing the work activity and should coordinate with the Facility Point of Contact (FPOC) who can provide additional information on specific hazardous material inventory control requirements.

### **6.1 Chemical Hazardous Materials**

The ChemTrack Chemical Inventory and Material Safety Data Sheet (MSDS) Management System are the primary tools for tracking chemical hazardous materials at LLNL, including most laboratory reagents (see Appendix A for a list of items tracked and those items not included in ChemTrack). Newly purchased chemicals in primary containers (i.e., containers provided by the manufacturer) shall be entered by MDD personnel into ChemTrack upon receipt, or by the ChemTrack Operations Group (Ext. 4-4404) upon request. In addition, certain secondary containers designated by the

FPOC shall be tracked as needed to ensure the safety basis of the facility is maintained. At a minimum, an annual wall-to-wall chemical inventory and reconciliation are performed in each facility to update storage locations and chemical custodians for tracked items.

ChemTrack shall be updated when:

- Disposing of bar-coded chemical containers or transferring them to a nonLLNL location.
- Shutting down or transferring operations involving hazardous materials.
- Terminating employment at LLNL.
- Transferring one or more chemicals that may impact the safety basis of the facility.
- Reconciling the annual wall-to-wall inventory.

Contact the ChemTrack Operations Group in EPD for assistance, or refer to the ChemTrack website at:

<http://chemtrack.llnl.gov/>

## **6.2 Radioactive Hazardous Materials**

Materials Management maintains an accountability system for specified radioactive materials. Sealed sources are inventoried by the custodian (Class I) or Hazards Control (Class II, III, and IV), as described in *ES&H Manual* Document 20.2, "LLNL Radiological Safety Program for Radioactive Materials."

## **6.3 Explosives**

Requirements for maintaining inventories of explosives are established in *ES&H Manual* Document 17.1, "Explosives."

## **6.4 Biohazardous Materials**

Formal procedures for tracking biohazardous materials (etiological and select agents) are being developed. Contact the LLNL Biosafety Officer for more information.

## 6.5 Classified Hazardous Materials

Contact the Materials Management Section for classified hazardous materials tracking requirements.

## 7.0 Offsite Shipping of Hazardous Materials

The Laboratory is considered to be the "shipper" whenever hazardous materials, substances, or wastes are shipped offsite; the vendor or person who transports the material is the "carrier." In some cases, LLNL may be both the shipper and carrier (e.g., transportation of hazardous material from Livermore to Site 300). As a shipper, the Laboratory shall:

- Properly package, mark, and label containers.
- Provide MSDSs to accompany the load, if applicable.
- Prepare shipping documents, if applicable.
- Offer placards, if applicable.
- Perform quality assurance checks before the material leaves the site.
- Provide a bill of lading or manifest when necessary.

Offsite\* shipments of hazardous materials shall conform to the following requirements:

- a. Hazardous materials, substances, or wastes to be shipped offsite shall have a shipper's certification of content and shall be packaged, marked, and labeled in accordance with applicable DOT regulations and DOE orders.
- b. Hazardous materials shall only be shipped by one of the following organizations:
  - Materials Management Section (Category 1 controlled, nonwaste materials).
  - HWM Division (Category 1 waste and all Category 2 materials).
  - Shipping Section of MDD (Category 3 materials).

The custodian of the material shall contact the appropriate organization to package, mark, and label the material for shipment. A carrier shall obtain signed shipping documents from the appropriate organization.

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\* "Offsite" for hazardous material packaging and transportation or hazardous waste generation is any activity outside the geographically contiguous private property owned by or under the control of LLNL. For example, materials transported across East Avenue to Sandia National Laboratory shall conform to offsite shipping requirements.

- c. Shipping documents shall be prepared by the Shipping Section of MDD (Category 3 materials), the HWM Division (Category 2 materials), and the Materials Management Section (Category 1 materials).
- d. Contractors authorized to ship hazardous materials offsite for their contract organization shall have the shipping documents prepared by one of the organizations mentioned in "b" above.
- e. Final quality checks of all offsite shipments of hazardous materials shall be performed by the Traffic Office of MDD.

Any LLNL organization that transports hazardous materials, substances, or wastes offsite is considered to be a carrier. A carrier shall obtain signed shipping documents from the Traffic Office of MDD.

## **8.0 Responsibilities**

All workers and organizations shall refer to Document 2.1, "Laboratory and ES&H Policies, General Worker Responsibilities, and Integrated Safety Management" in the *ES&H Manual* for a list of general responsibilities. This section describes specific responsibilities of LLNL organizations and workers who have key safety roles.

In addition to the responsibilities specified below, each organization is required to ensure that personnel assigned to handle hazardous materials are adequately trained and equipped to perform their work safely and in accordance with LLNL and DOE policies.

### **8.1 Supervisors**

Supervisors of employees who acquire, ship, handle, store, or transport hazardous materials onsite and offsite shall:

- Ensure that work with hazardous materials is authorized with an IWS when needed.
- Ensure that their employees adhere to the requirements contained in the *ES&H Manual*.
- Ensure that employees are trained in accordance with safety policies and procedures that cover how to receive, handle, ship, transport, and store hazardous materials, substances, and waste materials as applicable.
- Ensure that employees can readily obtain MSDSs when needed. Supervisors who receive hazardous materials (e.g., blanket orders) directly from outside sources shall request the MSDS and forward a copy to MSDS, L-621, for filing.

Supervisors who receive MSDSs directly from vendors shall also send a copy to MSDS, L-621, including the name of the Laboratory user, the building number, and the room number where the material is located.

- Ensure the proper certification of hazardous materials shipped offsite.
- Ensure that ChemTrack (Ext. 4-4404) is updated or notified of chemical inventory changes as identified in Section 6.0.
- Complete required training, including course HS4050,-W "Health Hazards Communication for Supervisors."
- Ensure hazardous materials are placed in primary containers acceptable to DOT before giving the materials to Shipping Services for over-packing.

## 8.2 Employees

Programmatic personnel, researchers, waste generators, HWM technicians, and others who request the procurement or shipment of hazardous materials or substances, or who generate waste materials, shall:

- Prior to obtaining new\* materials or bringing materials into a facility,
  - Ensure that the work is appropriately authorized, i. e., an IWS, if needed, is in place.
  - Determine if less hazardous alternatives are available.
  - Assess programmatic needs to determine the minimum quantity needed using pollution prevention techniques
  - Do not obtain excessive quantities and/or stockpile material inventories, but acquire only quantities needed for use in the near term.
  - Consult with the FPOC for the building in which the material is to be used to ensure that the quantity will be allowed within the facility's safety basis envelope.
- Notify the FPOC upon receipt of hazardous material.
- Assess the availability of alternative sources of chemicals, prior to purchasing new materials, through LLNL's Chemical Exchange Warehouse (CHEW) and ChemTrack.
- Follow applicable controls when obtaining, using, storing, shipping, or disposing of hazardous material.

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\* In this context "new" means both a material that has not been previously used in the facility and adding materials that would increase the facility's inventory of a given material.

- Ensure that bar-code labels for the ChemTrack system are on all primary and certain secondary (see Appendix A) containers when required.
- Update or notify ChemTrack (Ext. 4-4404) when
  - Obtaining new chemicals or items to be entered in ChemTrack (see Appendix A).
  - Disposing of bar-coded chemical containers or transferring them to a non-LLNL location. Remove the lower half of the bar code, affix it to a ChemTrack Disposal/Transfer Form, and mail the form to the ChemTrack Group (L-621). Chemical custodians with ChemTrack Web user passwords may update their inventories (i.e., remove items) directly by accessing the ChemTrack Home Page at <http://chemtrack.llnl.gov> and clicking on Update Inventory.
  - Shutting down or transferring operations involving hazardous materials.
  - Terminating employment at LLNL.
  - Transferring one or more chemicals, including bulk chemical deliveries, that may impact the safety basis of the facility.
  - Reconciling the annual wall-to-wall inventory. Assist ChemTrack staff in locating and inventorying all bar-coded hazardous materials and accounting for missing chemicals during the annual reconciliation.
- Forward MSDSs to ChemTrack upon request for newly purchased products.
- Contact the organization responsible for packaging and transporting such materials. (See Document 21.2 for onsite transportation of hazardous materials and Section 7.0 of this document for offsite transportation.)
- Follow Laboratory policy and established safety procedures, including any instructions provided by the organizations authorized to ship such materials.
- Fulfill the responsibilities described in the *ES&H Manual* for the purchase, receipt, shipping, handling, storage, and transport of hazardous materials.

### 8.3 Hazards Control Department

The Hazards Control Department shall:

- Respond to emergency situations and incidents involving hazardous materials.
- Provide
  - Liaison, safety guidance, and safety services to personnel who package and transport hazardous materials.

- Emergency response communication through the Fire Department for hazardous material incidents.
  - Information about the hazards of specific materials, including the interpretation of information in MSDSs.
- Fulfill the responsibilities described in Document 21.2.
- Approve purchases of controlled hazardous materials.
- Designate a representative to serve on the PATS Working Group as a general member.

#### **8.4 Technical Release Representatives**

Technical Release Representatives (TRRs) shall:

- Attend the ES&H Briefing for TRRs and Buyers prior to purchasing hazardous materials.
- Follow LLNL's procurement procedures when placing orders for hazardous materials and related items discussed in Section 3.0. Refer to the latest version of the *LLNL Unicard User's Guide* for a list of restricted items and the authorization procedure.
- Fax a current copy of the MSDS provided by the chemical manufacturer to ChemTrack (fax extension 4-5987) when ordering a chemical product for the first time, or when requested to do so by ChemTrack.
- Notify the ChemTrack Operations Group when newly purchased chemicals are delivered without bar codes so they can be properly inventoried.

#### **8.5 Materials Management Section**

The Materials Management Section shall do the following for Category 1 controlled, nonwaste materials:

- Provide for the safe and secure receipt and distribution of Category 1 controlled nonwaste materials in accordance with LLNL and DOE policies.
- Request that the ChemTrack Operations Group place bar-code labels on unclassified chemical containers and inventory them, as required.
- Ensure that proper packaging and labeling procedures are followed.
- Prepare the appropriate documents for offsite shipment of Category 1 hazardous materials. Category 1 classified hazardous waste documents are prepared in coordination with the HWM Division of EPD.

- Determine compatibility requirements for loads being carried by Materials Management.
- Obtain assistance from ES&H Teams when necessary.
- Fulfill the responsibilities described in Document 21.2.
- Obtain DOE interim hazard classifications and DOT hazard classification for new explosives or new explosive articles.
- Determine the need for DOT exemptions and obtain such exemptions when necessary.

The Materials Management Section manager serves on the PATS Working Group as a principal member.

## **8.6 Shipping Services**

Shipping Services shall do the following for Category 3 hazardous materials:

- Ensure that hazardous material containers meet the requirements in DOT regulations and applicable DOE orders before transporting the material offsite. The contents of such containers shall be packaged, marked, and labeled properly.
- When requested, provide technical information about proper shipping containers.
- Provide transportation services when requested, including the proper placards and labels.
- Provide secondary packaging, if required
- Prepare shipping documents.
- Determine compatibility requirements for loads.
- Obtain assistance from the ES&H Teams when necessary.
- Fulfill the responsibilities described in Document 21.2.
- Ensure that hazardous materials are packaged and transported in accordance with applicable DOT, safety, and environmental regulations.
- Obtain shipping containers and ensure that they meet applicable regulatory requirements. Shipping containers shall be provided to organizations that ship hazardous materials, substances, and wastes.

## **8.7 Materials Distribution Division**

The Materials Distribution Division shall:

- Establish and maintain a system of procedures and controls for the safe and efficient receipt, distribution, and shipment of hazardous materials.
- Place bar codes on chemical containers and inventory them when they arrive onsite.
- Forward MSDSs to the ChemTrack MSDS Center at L-621.
- Manage Shipping Services (see Section 8.6 for Shipping Services' responsibilities).

The MDD division leader serves on the PATS Working Group as a principal member.

## **8.8 Environmental Protection Department**

The Environmental Protection Department shall:

- Respond to emergency situations and incidents involving the release of hazardous materials to the environment.
- Provide liaison, environmental guidance, and environmental services to personnel who procure, receive, track, and transport hazardous materials.
- Manage:
  - ChemTrack Operations Group (see Section 8.9 for the ChemTrack Operations Group's responsibilities).
  - Hazardous Waste Management Division (see Section 8.10 for the HWM Division's responsibilities).

## **8.9 ChemTrack Operations Group**

The ChemTrack Operations Group shall:

- Administer and maintain the Laboratory's chemical inventory and MSDS management database.
- Complete an annual site-wide inventory of bar-coded chemical containers.
- Prepare required chemical inventory and use reports for internal customers and regulatory agencies.
- Assist chemical users and Materials Distribution Division personnel (Receiving) with bar coding and chemical inventory activities upon request.

- Maintain LLNL's MSDS filing and retrieval system and provide MSDSs upon request.
- Train TRRs and buyers to follow proper hazardous material purchasing procedures.

### **8.10 Hazardous Waste Management Division**

The HWM Division shall do the following for Category 1 waste and Category 2 materials:

- Prepare and sign shipping documents and manifests before waste is shipped offsite. Coordinate with the Materials Management Section the preparation of shipping documents (hazardous waste manifests) for classified hazardous waste.
- Provide
  - Technical assistance to the ES&H Teams for Laboratory personnel on how to package hazardous, radioactive, and mixed wastes.
  - Guidance on the recycling of selected chemicals through the Chemical Exchange Warehouse (CHEW).
  - Proper placards and labels for waste storage containers.
  - Emergency assistance for releases to the environment.
- Establish a system of procedures and controls for the safe, efficient, and secure transport and storage of LLNL's hazardous, radioactive, and mixed wastes. The Division shall also ensure that these procedures comply with regulatory requirements.
- Treat and/or repackage wastes when necessary.
- Ensure that hazardous wastes are packaged, marked, and transported offsite in accordance with applicable requirements.
- Determine compatibility requirements for loads of waste shipments.
- Fulfill the responsibilities described in Document 21.2.
- Update or notify ChemTrack of chemical transfers in and out of the CHEW facility.

The HWM division leader serves on the PATS Working Group as a principal member.

### **8.11 Traffic Manager**

The traffic manager shall:

- Select the carrier and route of shipment for all offsite transportation of hazardous materials (Categories 1, 2, and 3).
- Prepare a bill of lading for most hazardous material shipments.
- Review and approve load placement, associated shipping documents, and waste manifests before shipment.
- Interface with jurisdictional authorities and commercial carriers when shipping hazardous materials offsite.
- Provide secondary oversight for DOT compliance of shipping papers, shipping containers, and carrier vehicles.

The traffic manager serves on the PATS Working Group as a general member. The Traffic Office is part of the Material Distribution Division, Procurement and Materiel Department, and the traffic manager can be contacted at 2-7492.

### **8.12 Protective Force Division**

The Protective Force Division within Safeguards and Security shall:

- Provide escort services for onsite transfers and/or shipments of Safeguards Categories I and II quantity materials in accordance with the guidance in DOE Order 5610.14, "Transportation Safeguards System Program Operations."
- Track DEA-controlled substances onsite.
- Perform quality assurance checks to assure that DEA-required storage and use requirements are followed.

### **8.13 Fleet Management**

The Automotive Fleet Management Group shall:

- Provide routine maintenance and repair on all transportation vehicles.
- Inspect commercial vehicles that transport explosives.

## **8.14 Packaging and Transportation Safety Program**

The PATS Working Group shall:

- Oversee the Laboratory's packaging and transportation safety program and assess its effectiveness.
- Maintain the Packaging and Transportation Safety Quality Assurance Plan.
- Ensure that Document 21.2, "Packaging and Transportation Safety (PATS) Manual," in the *ES&H Manual* is current.
- Approve the procurement of all containers used to transport hazardous materials.

## **8.15 Facility Points of Contact**

Facility Points of Contact (FPOCs) shall:

- Review and concur on all IWSs.
- Check new hazardous materials, quantities of existing materials, and related processes that are being introduced to a facility to ensure that the safety basis envelope is maintained. See Document 3.2, "Safety Basis Thresholds," in the *ES&H Manual*.
- Designate secondary containers or other materials that shall be entered in ChemTrack or otherwise tracked if necessary to maintain the facility safety basis envelope.
- Notify ChemTrack of bulk chemical deliveries and significant changes in the chemical inventory.

# **9.0 Work Standards**

## **9.1 Work Smart Standards**

19 CCR , §§ 2620–2734 and appendices, Hazardous Material Release Reporting, Inventory, and Response Plans.

22 CCR §§ 66261.1–66261.126 and appendices, Identification and Listing of Hazardous Waste (Chapter 11).

22 CCR §§ 66262.10–66262.89, Standards Applicable to Generators of Hazardous Waste (Chapter 12).

22 CCR §§ 66263.10–66263.50, Standards Applicable to Transporters of Hazardous Waste (Chapter 13).

- 22 CCR 66264.1–662664.1102, Standards for Owner and Operators of Hazardous Waste Transfer, Treatment, Storage, and Disposal Facilities (Chapter 14).
- 22 CCR 66265.1–662665.1102, Interim Status Standards for Owners and Operators of Hazardous Waste Transfer, Treatment, Storage, and Disposal Facilities (Chapter 15).
- 22 CCR §§ 66266.1–66266.130, Recyclable Materials (Recyclable Hazardous Waste) (Chapter 16).
- 22 CCR §§ 66268.1–66268.124 and appendices, Land Disposal Restrictions (Chapter 18).
- 22 CCR §§ 66270.1–66270.73 and appendices, Hazardous Waste Permit Program (Chapter 20).
- 22 CCR §§ 66279.1–67450.73, Standards for the Management of Used Oil (Chapter 29).
- 22 CCR §§ 67450.1–67800.5, Requirements for Units and Facilities Deemed to have a Permit by Rule (Chapter 45).
- 10 CFR 71, "Packaging and Transportation of Radioactive Materials".
- 29 CFR 1910, "Occupational Safety and Health Standards" (selected portions).
- 29 CFR 1926, "Safety and Health Regulations for Construction" (selected portions).
- 40 CFR 260, "Hazardous Waste Management System: General."
- 40 CFR 261, "Identification and Listing of Hazardous Waste."
- 40 CFR 262, "Standards Applicable to Generators of Hazardous Waste."
- 40 CFR 263, "Standards Applicable to Transporters of Hazardous Waste."
- 40 CFR 264, "Standards for Owners and Operators of Hazardous Waste Treatment, Storage and Disposal Facilities."
- 40 CFR 265, "Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage and Disposal Facilities."
- 40 CFR 355, "Emergency Planning and Notification."
- 40 CFR 370, "Hazardous Chemical Reporting: Community Right-to-Know."
- 40 CFR 372, "Toxic Chemical Release Reporting: Community Right-to-Know."
- 49 CFR 100-199, "Research and Special Programs Administration, DOT."
- 42 USC § 9601 et seq., Comprehensive Environmental Response, Compensation and Liability Act of 1990 (CERCLA/Superfund).
- Bay Area Air Quality Management District Regulations 1–12, Regulations and Permitting Requirements (Livermore Site).
- California Health and Safety Code*, §§ 25500–25547.2, "Hazardous Materials Release Response Plans and Inventory."

DOE Order 440.1A, "Worker Protection Management for DOE Federal and Contractor Employees," Attachment 2, "Contractor Requirement Document," Sections 1–11, 13–16, 18 (delete item 18.a), 19 (delete 19.d.3) and 22.

DOE M440.1-1, *DOE Explosives Safety Manual*, Department of Energy, Washington, DC.

San Joaquin Valley Unified Air Pollution Control District Regulations and Rules 1010–9120 (Site 300).

## **9.2 Other Required Standards**

DOE Order 5610.14 .

Comprehensive Drug Abuse And Control Act of 1970, PL 91-513.

# **10.0 Resources for More Information**

## **10.1 Contacts**

### **10.1.1 General**

For general information on storing, labeling, and using hazardous materials, or for special procedures, contact the appropriate ES&H Team or off-shift ES&H support.

### **10.1.2 Packaging Requirements**

For information about packaging requirements, contact:

- Category 1 materials—Materials Management Section.
- Category 2 materials—HWM Division.
- Category 3 materials—Shipping Section of Material Distribution Division.

### **10.1.3 Training Requirements**

For information about training requirements, contact:

- Category 1 materials—Materials Management Section and Hazards Control Department; Safety, Education, and Training Section.
- Category 2 materials—EPD Training Section or the appropriate ES&H Team.
- Category 3 materials— Materials Management Section and Hazards Control Department; Safety, Education, and Training Section.

#### 10.1.4 ChemTrack System

For information about the ChemTrack system, contact the ChemTrack Hotline (Ext. 4-4404) or visit the website at

<http://chemtrack.llnl.gov/>

#### 10.1.5 Material Safety Data Sheets

Supervisors and employees can obtain the MSDS for specific products by:

- Calling the MSDS Hotline (ext. 4-4404).
- Sending an e-mail message ([msds@llnl.gov](mailto:msds@llnl.gov)) or fax (ext. 3-9027) to the MSDS Coordinator.
- Completing the MSDS Request Form and mailing it to MSDS, L-621. (See Document 10.2 for more information.)
- Accessing the linked MSDS website at

<http://chemtrack.llnl.gov>

(click on Report or MSDS buttons)

#### 10.2 Applicable Lessons Learned

The following are examples of applicable lessons learned. Additional lessons learned can be found at the lessons learned website:

[http://www-r.llnl.gov/es\\_and\\_h/lessons/lessons.html](http://www-r.llnl.gov/es_and_h/lessons/lessons.html)

- Acetone Fire Damages Hood.
- Chlorine Gas Release from Scale-Up of Experiment.
- Consolidating Similar but not Identical Liquids.
- Dimethylmercury Poisoning—an An Update.
- Incomplete Reaction and Labeling Problems.
- Open Flames and Alcohol—A Dangerous Combination.
- Problems with Hydroxylamine and Its Compounds.
- Safely Transporting Hazardous Material.
- Safely Transporting Pressurized Gas Cylinders of Propane.
- Use Caution when Handling Toxic/Hazardous Materials.

## Appendix A

### ChemTrack

At a minimum, ChemTrack is used to track the following:

- Primary chemical containers, i.e., those provided and shipped by the chemical manufacturer.
- Secondary chemical containers, including tanks and equipment reservoirs holding  $\geq 55$  gallons, 500 pounds, or 200 cubic feet of compressed gas at standard temperature and pressure.
- Other secondary containers containing hazardous materials as designated by the FPOC to maintain the facility safety basis envelope.

The following items are *included* in the ChemTrack inventory system:

- Laboratory and photographic chemicals (except film).
- Pressurized gases/aerosol cans.
- Paints, adhesives, sealants, and dyes.
- Industrial cleaners (e.g., solvent-based).
- Office, custodial, and cafeteria chemicals in >1-gallon containers.
- Oils, lubricants, and coolants.
- Herbicides and pesticides.
- Specialty batteries (e.g., large lithium).

The following items are *excluded* from the ChemTrack inventory system:

- Food.
- Personal care products.
- Office, custodial, and cafeteria chemicals in  $\leq 1$ -gallon containers.
- Biological products (serums, enzymes, amino acids, and antibiotics).
- High explosives.
- Radioactive and mixed materials.
- Classified materials or parts.
- Unboxed wire (all types).

- Other miscellaneous items, such as:
  - Draeger and sniffer tubes
  - Most common batteries, including auto
  - Most analytical samples and standards  $\leq 25$  ml
  - Biological growth media and saline solutions
  - Compressor adsorber kits
  - Garnet, floor sweep, sand, and cement
  - Water (including distilled, deionized, and heavy).

For more information, contact the ChemTrack Hotline at extension 4-4404, or go to the following website:

<http://chemtrack.llnl.gov>

## **Appendix B**

### **Controls for Authorized Chemical Delivery Areas**

Upon request, ES&H Teams identify administrative and physical controls when establishing areas where suppliers or carriers can deliver chemicals. These areas are for directorate convenience. MDD authorizes forward receiving areas with the directorates. Specific controls are developed by the ES&H Teams for particular circumstances on a case-by case-basis.

There are no more "drop points." The only locations for direct deliveries are B361, B512, and T5198 (i.e., directly to Biology and Biotechnology Research and Plant Engineering). Direct delivery locations are required to be approved by MDD. Operation of direct delivery locations is the responsibility of the requesting directorate. The directorate is also responsible for entering the products received into the ChemTrack System.

The controls below shall be considered for each direct delivery area. Review of the intended operations will determine the appropriateness and extent of the necessary controls to be in place before a delivery.

### **Administrative Controls**

- Clearly describe the intended purpose of the area (i.e., the kind of materials to be received and the chemicals prohibited from entering the area, including any other limits).
- Develop operating procedures and a spill response plan, which should include
  - A notification procedure for chemical deliveries.
  - Information about who to call and what to do in case of a spill or leaking packages.

Ensure that the spill response plan is readily accessible in chemical handling areas.

- Identify responsible personnel, and ensure they are properly trained. At a minimum, training should cover
  - Course HS4240-CBT, "Chemical Safety-CBT," (or equivalent).
  - Department of Transportation (DOT) regulations.
  - ChemTrack procedures. (For further information, contact the ChemTrack Operations Group, ext. 4-4404.)

- Ensure that a ChemTrack bar-coding operation is in place.
- Ensure that the self-assessment plan includes a periodic review of the operation.

### **Physical Controls**

- Provide adequate ventilation for the types of chemicals to be handled.
- Ensure an appropriate level of security, access control, and easy access to a telephone.
- Ensure adequate fire and seismic protection.
- Provide personal protective equipment, a spill kit, and access to a functioning safety shower and an eyewash station.
- Make provisions for secondary containment and protection from the elements.
- Properly segregate incompatible materials.
- Separate the chemical-handling area from storm and sanitary sewer drains.